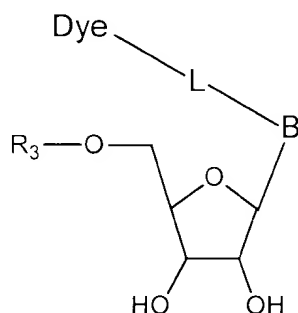


IN THE CLAIMS:

Claims 1-100 (cancelled)

Claim 101 (previously presented). A method for determining a polynucleotide sequence, comprising

- (i) annealing at least one primer to a template polynucleotide;
- (ii) extending said at least one primer in the presence of a mixture of unlabeled dNTPs and at least one dye-labeled ribonucleotide having the formula:



wherein B is a nucleobase; L is a linker; R₃ is triphosphate, α -thiotriphosphate, or a salt thereof, and Dye is a reporter group;

so that primer extension products that contain at least one dye-labeled ribonucleotide are formed;

- (iii) cleaving one or more primer extension products to form a plurality of labeled fragments;
- (iv) separating the extension products by size; and
- (v) detecting the fragments to determine the polynucleotide sequence.

Claim 102 (original). The method according to claim 101, wherein the dye-labeled ribonucleotides are rATP-PA-6R6G, rCTP-PA-Rox, rUTP-PA-Tamra and rGTP-EO-R110.

Claim 103 (original). The method according to claim 101, wherein one primer is biotinylated.

Claim 104 (original). The method according to claim 101, wherein at least one primer is a hybridization based pull-out primer.

Claim 105 (original). The method according to claim 101, wherein the DNA polymerase is a thermostable DNA polymerase.

Claim 106 (original). The method according to claim 105, wherein the thermostable DNA polymerase is a modified thermostable DNA polymerase having increased efficiency for the incorporation of ribonucleotides.

Claim 107 (original). The method according to claim 101, wherein the means for hydrolyzing the extension products at each occurrence of a ribonucleotide is alkali treatment, heat treatment, or a ribonuclease.

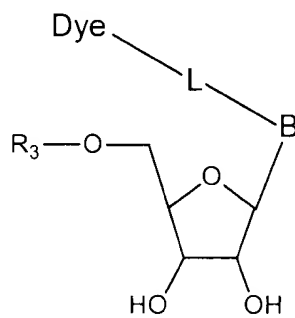
Claim 108 (currently amended). A method for detecting mutations in DNA a polynucleotide, comprising

- annealing two oligonucleotide primers to a template polynucleotide;

- incubating extending the two oligonucleotide primers with a DNA polymerase-

~~that can incorporate both dNTPs and rNTPs in a reaction comprising~~ in the presence of

a mixture of unlabeled dNTPs and at least one dye-labeled ribonucleotide ~~of the invention~~ having the formula:



wherein B is a nucleobase; L is a linker; R₃ is triphosphate, α -thiotriphosphate, or a salt thereof, and Dye is a reporter group;

so that primer extension products that contain at least one dye-labeled ribonucleotide are formed;

- ~~treating the~~ cleaving one or more primer extension products ~~with a means for~~
~~hydrolyzing the extension products at each occurrence of a ribonucleotide to produce to~~
form a plurality of labeled fragments;

- ~~resolving~~ separating the fragments by size; and
- detecting the fragments to detect the mutations.

Claim 109 (currently amended). The method according to claim 108, wherein the fragments that contain primers are separated from other fragments before the fragments that contain primers are resolved separated by size.

Claim 110 (original). The method according to claim 108, wherein the mutation is a single nucleotide polymorphism.

Claim 111 (currently amended). The method according to claim 108, wherein the DNA polynucleotide is genomic DNA.

Claim 112 (original). The method according to claim 108, wherein at least one primer is biotinylated.

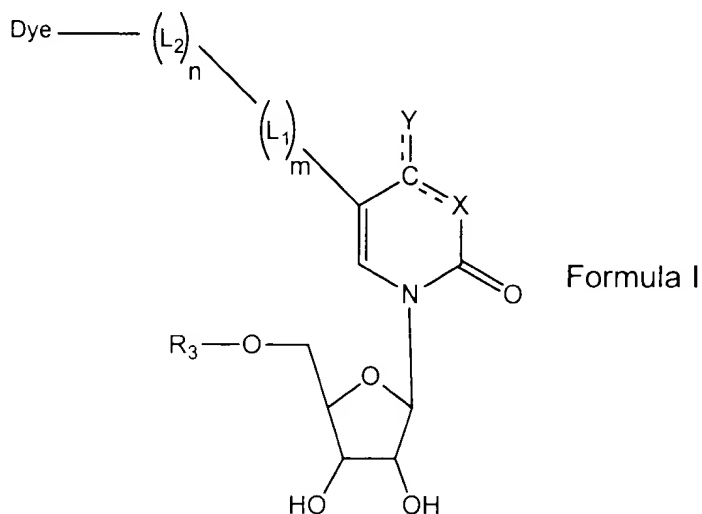
Claim 113 (original). The method according to claim 108, wherein at least one primer is a hybridization based primer.

Claim 114 (original). The method according to claim 108, wherein one primer comprises a modified base preventing primer extension in the 5' direction.

Claims 115-123 (cancelled)

Claim 124 (currently amended). The method according to claim 101, wherein said at least one dye-labeled ribonucleotide is:

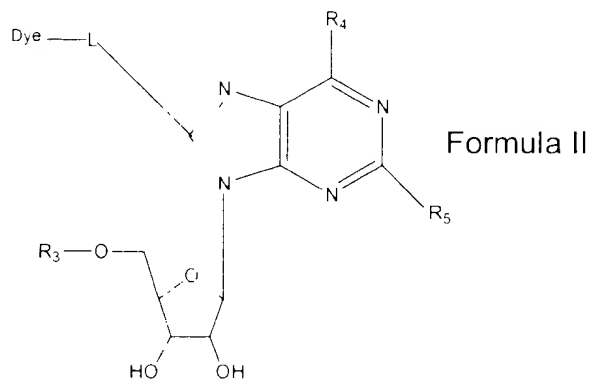
(1) a compound of formula I:



Formula I

- wherein X is N , NH , or C ;
- wherein Y is O or NH_2 ;
- wherein R_3 is either triphosphate, α -thiotriphosphate, or a salt thereof;
- wherein L_1 is a linker;
- wherein L_2 is a benzylamine linker or a phosphate linker;
- wherein $n = 0-4$, $m = 0-4$, and $m + n$ is at least 1; and;
- wherein the dye is any reporter group;

(2) a compound of formula II:



Formula II

- wherein L is a linker;
- wherein R_4 is either NH_2 , OH , or O , and B is either NH_2 , OH , or H ;

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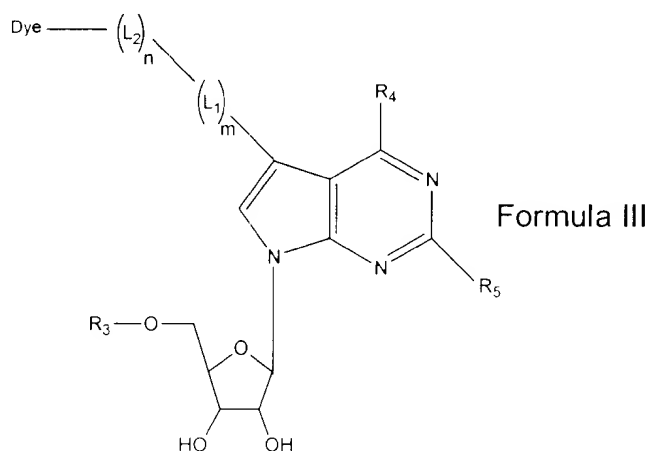
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- wherein R_3 is either triphosphate, α -thiotriphosphate, or a salt thereof;

and

- wherein the dye is any reporter group;

(3) a compound of ~~formula~~ formula III:



- wherein L_1 is a linker;

- wherein L_2 is a benzylamine linker or a phosphate linker;

- wherein $n = 0-4$, $m = 0-4$, and $m + n$ is at least 1;

- wherein R_4 is either NH_2 , OH, or O, and R_5 is either NH_2 , OH, or H;

- wherein R_3 is either triphosphate, α -thiotriphosphate, or a salt thereof;

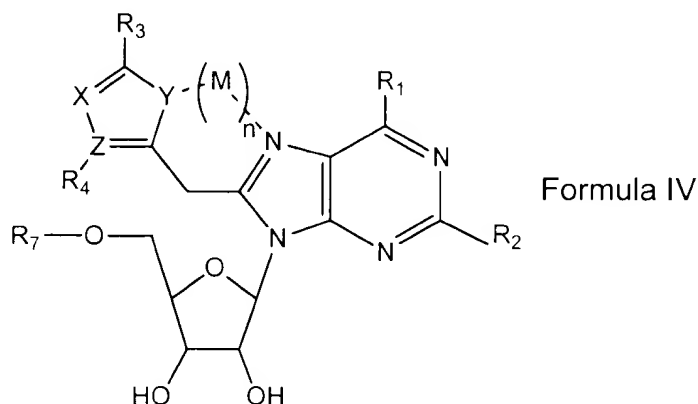
and

- wherein the dye is any reporter group;

(4) a compound of formula IV:

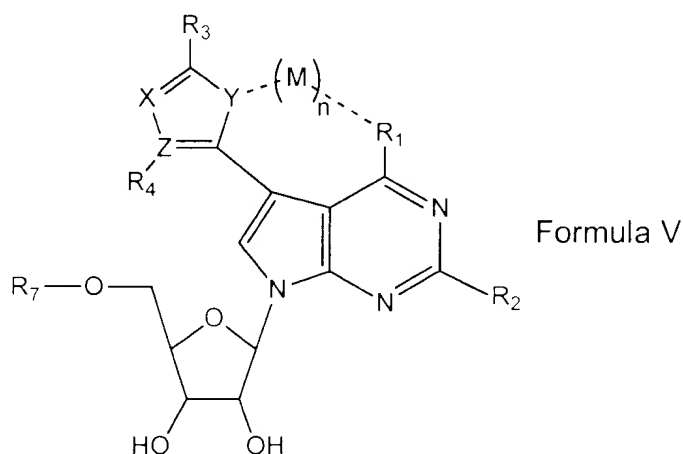
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- wherein R_1 , R_2 , and R_4 are independently H, O, OR, S, SR, NR_2 or CR_2 ;
- wherein R_3 is SR, NR_2 , OR, or CR_2 and comprises a reporter group;
- wherein R is hydrogen, alkyl, aryl, or an amino acid;
- wherein R_7 is either triphosphate, α -thiotriphosphate, or a salt thereof;
- wherein X, Y, and Z are independently carbon, nitrogen, oxygen, sulfur, phosphorus, or selenium;
- wherein n is 0 or 1; and
- wherein M is H_2O or any metal;

(5) a compound of formula V:



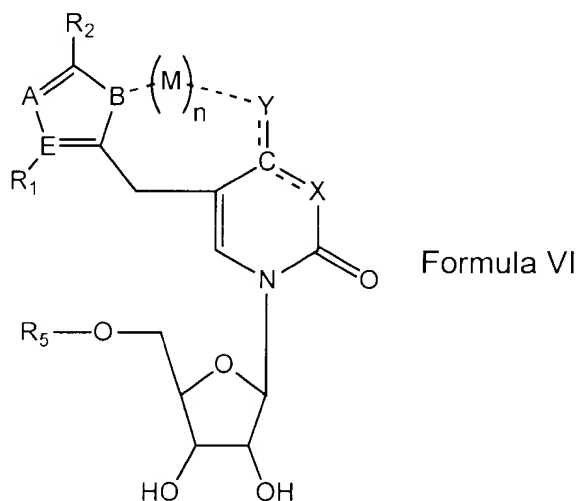
- wherein R_1 , R_2 , and R_4 are independently H, O, OR, S, SR, NR_2 or CR_2 ;
- wherein R_3 is SR, NR_2 , OR, or CR_2 and comprises a reporter group;

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- wherein R is hydrogen, alkyl, aryl, or an amino acid;
- wherein R₇ is either triphosphate, α-thiotriphosphate, or a salt thereof;
- wherein X, Y, and Z are independently carbon, nitrogen, oxygen, sulfur, phosphorus, or selenium;
- wherein n is 0 or 1; and
- wherein M is H₂O or any metal;

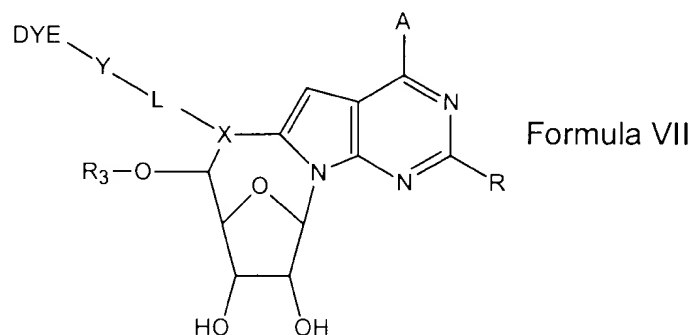
(6) a compound of formula VI:



- wherein R₁ is H, O, OR, S, SR, NR₂, or CR₂;
- wherein R₂ is SR, NR₂, OR, or CR₂ and comprises a reporter group;
- wherein R is hydrogen, alkyl, alkynyl, aryl, or an amino acid;
- wherein R₅ is either triphosphate, α-thiotriphosphate, or a salt thereof;
- wherein X is N, NH, or C;
- wherein Y is O or NH₂;
- wherein A, B, and E are independently C, N, O, S, P, or Se;
- wherein n is 0 or 1; and

- wherein M is H₂O or any metal;

(7) a compound of formula VII:



- wherein A is NH₂, OH, or O;

- wherein R is H, O, NR'₂, S, CR'₂, or halide;

- wherein R' is hydrogen or alkyl;

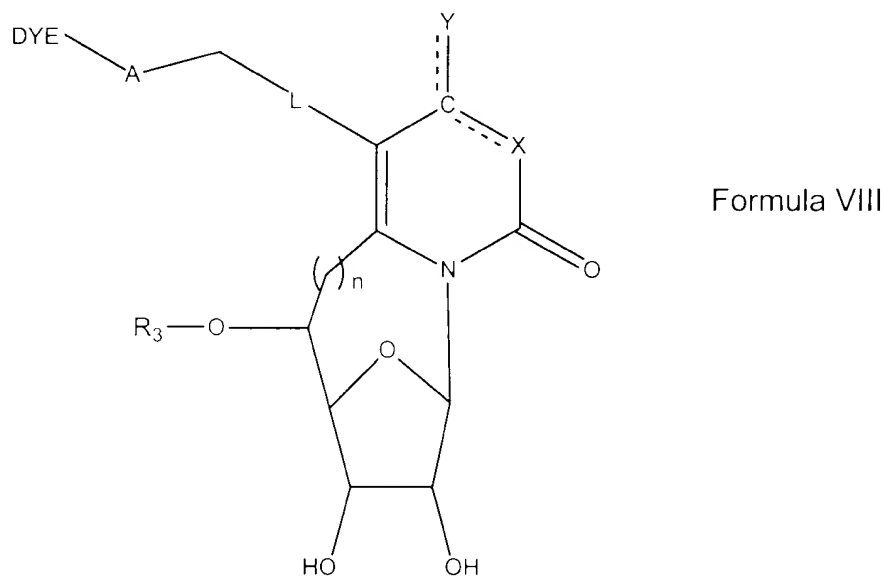
- wherein R₃ is either triphosphate, α-thiotriphosphate, or a salt thereof;

- wherein L is alkyl;

- wherein X is CR or N and Y is O, S, or NH; and

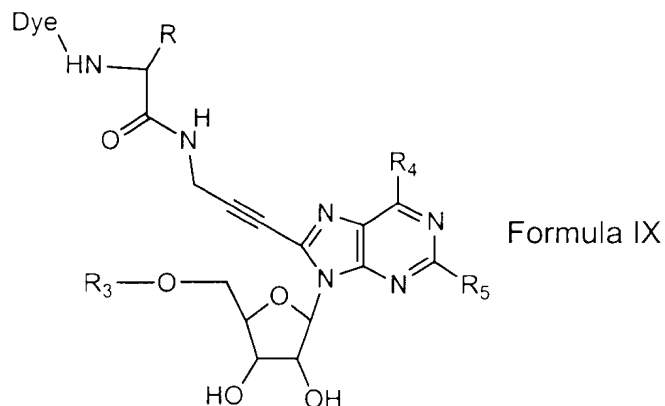
- wherein the dye is any reporter group;

(8) a compound of formula VIII:



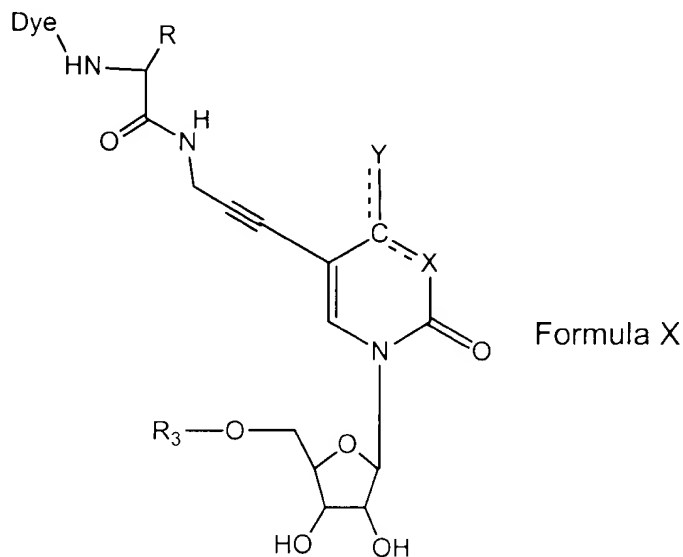
- wherein X is N, NH, or C;
- wherein Y is O or NH₂;
- wherein R₃ is either triphosphate, α-thiotriphosphate, or a salt thereof;
- wherein A is O, S, or NH;
- wherein L is alkyl or aryl substituted at from 0 to 3 positions in a chemically reasonable manner with F, Cl, Br, I, C1-C18 alkyl, Silyl, OH, OR', SH, SR', SOR', SO₂R', SO₃, or NR'₂;
- wherein R' is hydrogen or alkyl;
- wherein n is 1 to 10; and
- wherein the dye is any reporter group;

(9) a compound of formula IX:



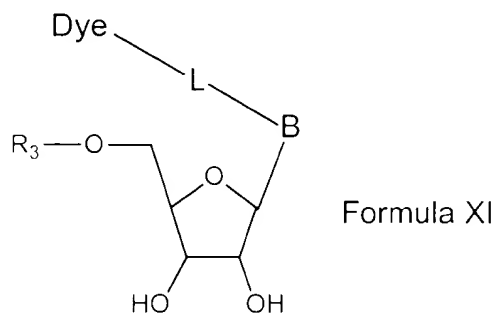
- wherein R₄ is NH₂, OH, or O and R₅ is NH₂, OH, or H, provided that if A is NH₂, B is H and if A is O, B is NH₂;
- wherein R₃ is either triphosphate, α-thiotriphosphate, or a salt thereof;
- wherein the dye is any reporter group; and
- wherein R is a side chain for mobility tuning;

(10) a compound of formula 40 X:



- wherein X is N, NH, or C;
- wherein Y is O or NH₂;
- wherein R₃ is either triphosphate, α-thiotriphosphate, or a salt thereof;
- wherein Dye is any reporter group, and
- wherein R is a side chain for mobility tuning;

(11) a compound of formula 44 XI:



- wherein B is a nucleobase selected from uracil, cytosine, adenine, 7-deazaadenine, guanine, and 7-deazaguanine;
- wherein R₃ is triphosphate or a salt thereof;

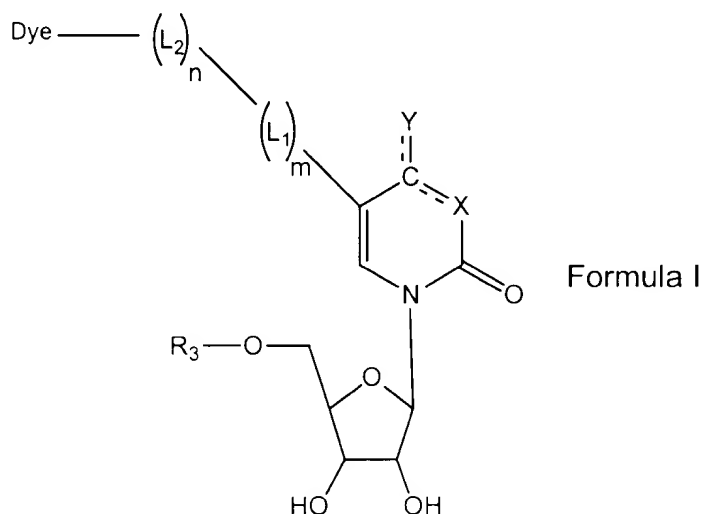
- wherein L is a linker selected from propargyl-ethyl-oxide-amino and propargylamino wherein the linker is attached to the 8-C of a adenine, 7-deazaadenine, guanine, or 7-deazaguanine nucleobase, the 7-C or 8-C of a 7-deazaadenine or 7-deazaguanine nucleobase, or the C-5 of a uracil or cytosine nucleobase; and
- wherein Dye is selected from a rhodamine dye and a fluorescein dye;
- and.

Claim 125 (previously presented). The method according to claim 101, wherein the reporter group is a rhodamine-type dye, a fluorescein-type dye, an energy transfer dye, or a cyanine-type dye.

Claim 126 (previously presented). The method according to claim 101, further comprising separating the fragments that contain at least one primer from other fragments.

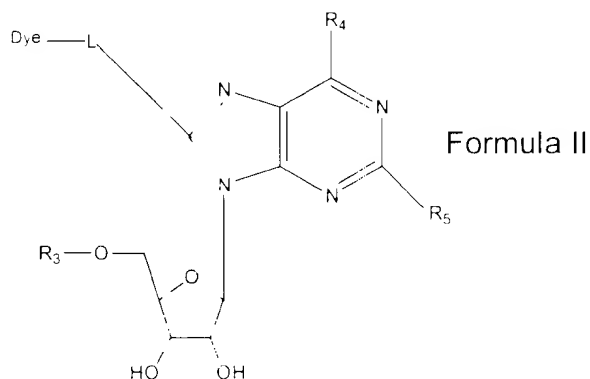
Claim 127 (new). The method according to claim 108, wherein said at least one dye-labeled ribonucleotide is:

- (1) a compound of formula I:



- wherein X is N , NH , or C ;
- wherein Y is O or NH_2 ;
- wherein R_3 is either triphosphate, α -thiotriphosphate, or a salt thereof;
- wherein L_1 is a linker;
- wherein L_2 is a benzylamine linker or a phosphate linker;
- wherein $n = 0-4$, $m = 0-4$, and $m + n$ is at least 1; and;
- wherein the dye is any reporter group;

(2) a compound of formula II:



- wherein L is a linker;
- wherein R_4 is either NH_2 , OH , or O , and B is either NH_2 , OH , or H ;

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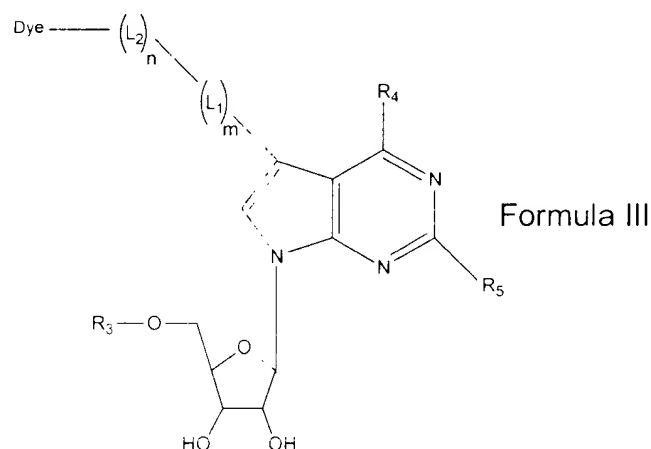
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- wherein R_3 is either triphosphate, α -thiotriphosphate, or a salt thereof;

and

- wherein the dye is any reporter group;

(3) a compound of formula III:



- wherein L_1 is a linker;

- wherein L_2 is a benzylamine linker or a phosphate linker;

- wherein $n = 0-4$, $m = 0-4$, and $m + n$ is at least 1;

- wherein R_4 is either NH_2 , OH , or O , and R_5 is either NH_2 , OH , or H ;

- wherein R_3 is either triphosphate, α -thiotriphosphate, or a salt thereof;

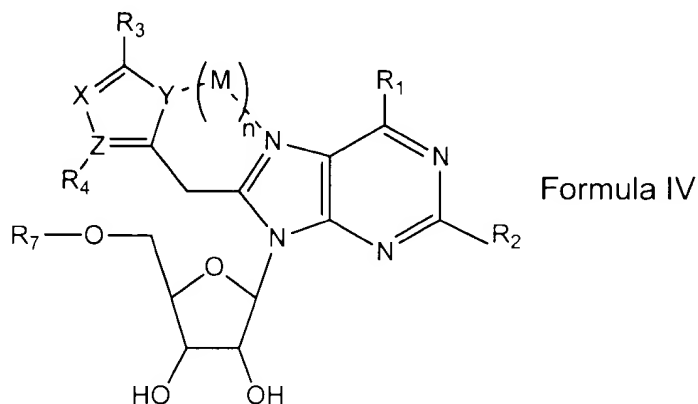
and

- wherein the dye is any reporter group;

(4) a compound of formula IV:

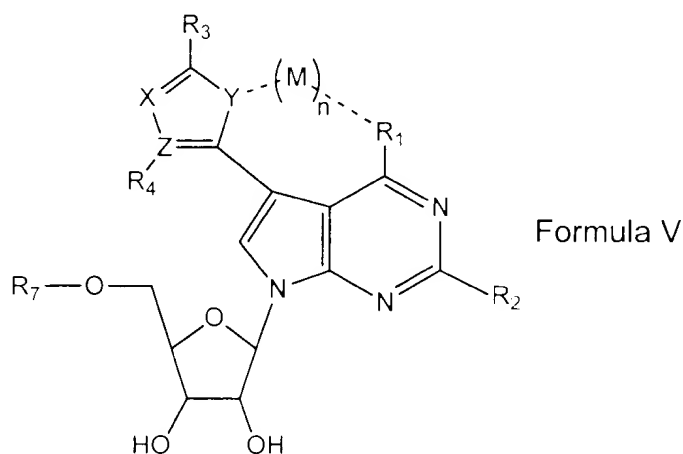
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- wherein R_1 , R_2 , and R_4 are independently H, O, OR, S, SR, NR_2 or CR_2 ;
- wherein R_3 is SR, NR_2 , OR, or CR_2 and comprises a reporter group;
- wherein R is hydrogen, alkyl, aryl, or an amino acid;
- wherein R_7 is either triphosphate, α -thiotriphosphate, or a salt thereof;
- wherein X, Y, and Z are independently carbon, nitrogen, oxygen, sulfur, phosphorus, or selenium;
- wherein n is 0 or 1; and
- wherein M is H_2O or any metal;

(5) a compound of formula V:



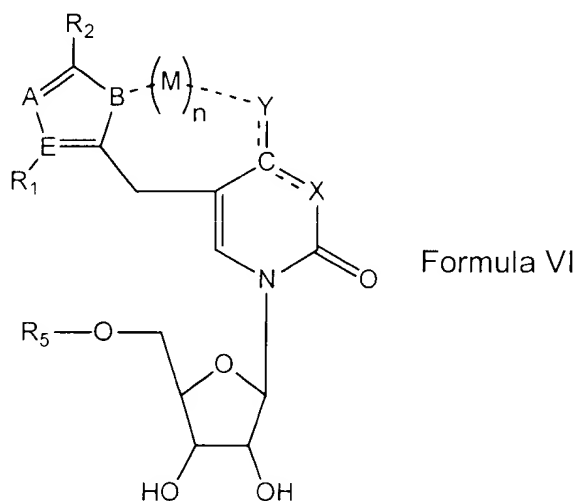
- wherein R_1 , R_2 , and R_4 are independently H, O, OR, S, SR, NR_2 or CR_2 ;
- wherein R_3 is SR, NR_2 , OR, or CR_2 and comprises a reporter group;

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- wherein R is hydrogen, alkyl, aryl, or an amino acid;
- wherein R₇ is either triphosphate, α-thiotriphosphate, or a salt thereof;
- wherein X, Y, and Z are independently carbon, nitrogen, oxygen, sulfur, phosphorus, or selenium;
- wherein n is 0 or 1; and
- wherein M is H₂O or any metal;

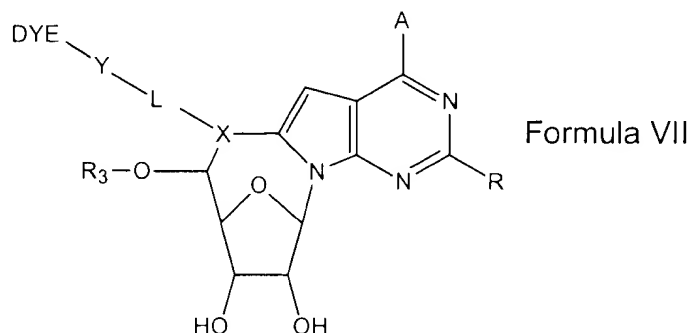
(6) a compound of formula VI:



- wherein R₁ is H, O, OR, S, SR, NR₂, or CR₂;
- wherein R₂ is SR, NR₂, OR, or CR₂ and comprises a reporter group;
- wherein R is hydrogen, alkyl, alkynyl, aryl, or an amino acid;
- wherein R₅ is either triphosphate, α-thiotriphosphate, or a salt thereof;
- wherein X is N, NH, or C;
- wherein Y is O or NH₂;
- wherein A, B, and E are independently C, N, O, S, P, or Se;
- wherein n is 0 or 1; and

- wherein M is H₂O or any metal;

(7) a compound of formula VII:



- wherein A is NH₂, OH, or O;

- wherein R is H, O, NR'₂, S, CR'₂, or halide;

- wherein R' is hydrogen or alkyl;

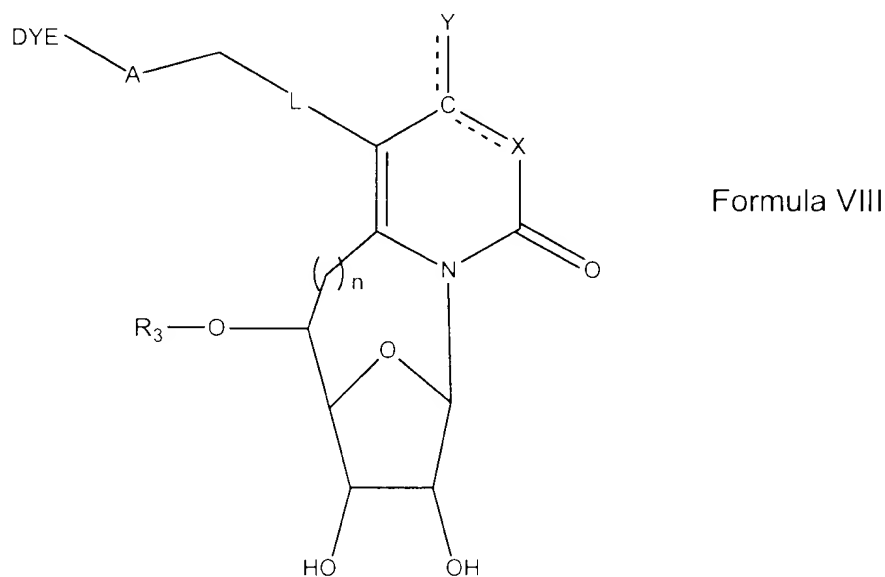
- wherein R₃ is either triphosphate, α-thiotriphosphate, or a salt thereof;

- wherein L is alkyl;

- wherein X is CR or N and Y is O, S, or NH; and

- wherein the dye is any reporter group;

(8) a compound of formula VIII:

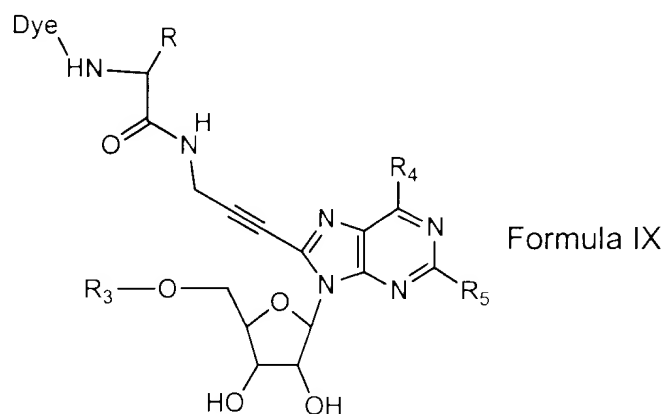


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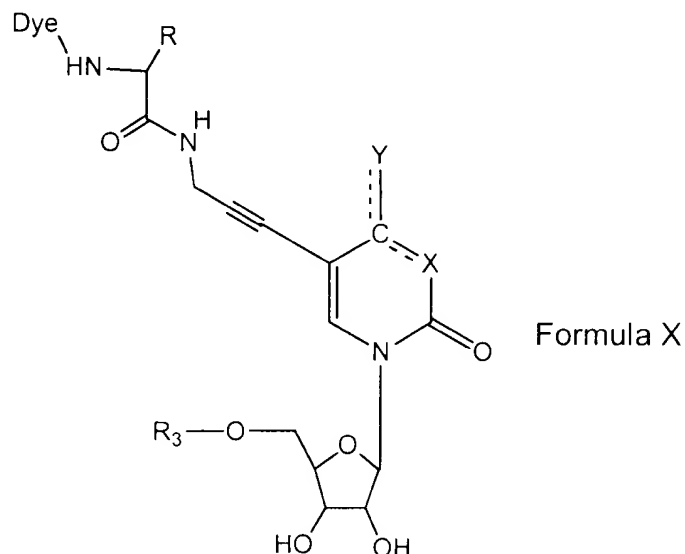
- wherein X is N, NH, or C;
- wherein Y is O or NH₂;
- wherein R₃ is either triphosphate, α -thiotriphosphate, or a salt thereof;
- wherein A is O, S, or NH;
- wherein L is alkyl or aryl substituted at from 0 to 3 positions in a chemically reasonable manner with F, Cl, Br, I, C1-C18 alkyl, Silyl, OH, OR', SH, SR', SOR', SO₂R', SO₃, or NR'₂;
- wherein R' is hydrogen or alkyl;
- wherein n is 1 to 10; and
- wherein the dye is any reporter group;

(9) a compound of formula IX:



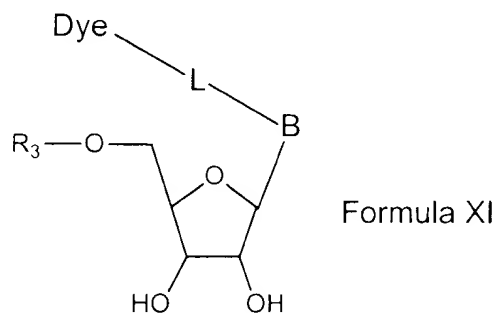
- wherein R₄ is NH₂, OH, or O and R₅ is NH₂, OH, or H, provided that if A is NH₂, B is H and if A is O, B is NH₂;
- wherein R₃ is either triphosphate, α -thiotriphosphate, or a salt thereof;
- wherein the dye is any reporter group; and
- wherein R is a side chain for mobility tuning;

(10) a compound of formula X:



- wherein X is N, NH, or C;
- wherein Y is O or NH₂;
- wherein R₃ is either triphosphate, α-thiotriphosphate, or a salt thereof;
- wherein Dye is any reporter group, and
- wherein R is a side chain for mobility tuning;

(11) a compound of formula XI:



- wherein B is a nucleobase selected from uracil, cytosine, adenine, 7-deazaadenine, guanine, and 7-deazaguanine;
- wherein R₃ is triphosphate or a salt thereof;

- wherein L is a linker selected from propargyl-ethyl-oxide-amino and propargylamino wherein the linker is attached to the 8-C of a adenine, 7-deazaadenine, guanine, or 7-deazaguanine nucleobase, the 7-C or 8-C of a 7-deazaadenine or 7-deazaguanine nucleobase, or the C-5 of a uracil or cytosine nucleobase; and
- wherein Dye is selected from a rhodamine dye and a fluorescein dye.

Claim 128 (new). The method according to claim 108, wherein the reporter group is a rhodamine-type dye, a fluorescein-type dye, an energy transfer dye, or a cyanine-type dye.

Claim 129 (new). The method according to claim 108, further comprising separating the fragments that contain at least one primer from other fragments.

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